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EXAMINER	
STONER, KILEY SHAWN	
ART UNIT	**PAPER NUMBER**
1793	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/810,040	ICE, DONALD A.	
	Examiner	Art Unit	
	Kiley Stoner	1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 October 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11 and 13-22* is/are rejected.

7)☒ Claim(s) *12* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date 10-29-07
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 14 and 24 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

With respect to claim 14, the examiner considers the newly added limitation that "a third and fourth segment are not encased within the plastic coating" as new matter. The specification supports electrical contacts that are not encased within the plastic coating; however, the examiner has not been able to locate support for where only the third and fourth segment(s) are not encased within the plastic coating.

With respect to claim 22, the examiner considers the newly added limitation that "a bent portion of at least one of the electrical contacts is encased in a plastic casing causing the bent portion to be substantially inflexible" as new matter. The specification supports electrical contacts encased the plastic; however, there is no disclosure or evidence in the specification that the plastic casing causes the bent portion to be

substantially inflexible. As discussed below, a flexible material is capable of providing mechanical support.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 2, 6-11, 13 and 15-21 are rejected under 35 U.S.C. 102(e) as being anticipated by Ames et al. (US 2003/0085054 A1).

With respect to claim 1, Ames discloses a method of manufacturing an optical transceiver module (p. 2, [0010]), connecting a plurality of electrical contacts of a lead frame connector to corresponding leads of an optical sub-assembly to obtain a combined structure that includes the lead frame connector and the optical sub-assembly (p. 2, [0016]-[0017]); and Ames discloses attaching the optical sub-assembly to a printed circuit board using the lead frame connector such that the lead frame connector electrically connects the optical sub-assembly to the printed circuit board (p. 2, [0010] and [0018]). Ames also discloses the lead frame connector provides mechanical support for the optical sub-assembly; See figures 2 and 8-10, which show that there is

no additional support for the optical assembly other than the flex cable, and see the support (66) in figure 9 (p. 3, [0023] and [0027]).

With regard to claim 2, the teachings of Ames et al. are the same as relied upon in the rejection of claim 1. Ames also discloses passing each of the leads of the optical sub-assembly through a hole in the corresponding electrical contact, and soldering the leads to the corresponding electrical contacts (p. 2, [0016]).

Regarding claim 6, the teachings of Ames et al. are the same as relied upon in the rejection of claim 1. Ames also discloses the optical sub-assembly is a transmitter optical sub-assembly (p. 1-2, [0009]-[0010]).

With respect to claim 7, the teachings of Ames et al. are the same as relied upon in the rejection of claim 1. Ames also discloses the optical subassembly as a receiver optical sub-assembly (p. 1-2, [0009]-[0010]).

With respect to claim 8, the teachings of Ames et al. are the same as relied upon in the rejection of claim 1. Ames also discloses connecting the plurality of electrical contacts to corresponding leads includes self-alignment of the lead frame connector with respect to the optical sub-assembly as the corresponding leads pass through holes in the electrical contacts (p. 2, [0016], lines 8-14).

Regarding claim 9, Ames discloses a method of manufacturing an optical transceiver module (p. 2, [0010]), obtaining a lead frame connector (p. 2, [0012]) that includes an electrically insulating casing (p. 2, [0013]), a plurality of conductors that are electrically isolated one from another by the electrically insulating casing (p. 2, [0013]); and the plurality of conductors forming a plurality of electrical contacts that correspond

to leads of the optical sub-assembly (p. 2, [0016], lines 1-3), and a plurality of leads that correspond to conductive structure on the printed circuit board (p. 2, [0018]). Ames also discloses connecting the plurality of electrical contacts of the lead frame connector to the corresponding leads of an optical sub-assembly to obtain a combined structure that includes the lead frame connector and the optical sub-assembly (p. 2, [0016]-[0017]), and attaching the optical sub-assembly to a printed circuit board using the lead frame connector such that the lead frame connector electrically connects the optical sub-assembly to the printed circuit board (p. 2, [0010] and [0018]). Ames also discloses the lead frame connector provides mechanical support for the optical sub-assembly; See figures 2 and 8-10, which show that there is no additional support for the optical assembly other than the flex cable, and see the support (66) in figure 9 (p. 3, [0023] and [0027]).

With regard to claim 10, the teachings of Ames et al. are the same as relied upon in the rejection of claim 1. Ames also discloses attaching the optical assembly to the printed circuit board using the lead frame connector comprising a plurality of leads of the lead frame connector to corresponding conductive structures on the printed circuit board of the optical transceiver module (p. 1-2, [0009] and p. 2, [0013]-[0014]).

Regarding claim 11, the teachings of Ames et al. are the same as relied upon in the rejection of claim 1. Ames also discloses bending the plurality of electrical contacts at discrete segments of the electrical contacts (p. 2, [0016]-[0020]).

With regard to claim 13, the teachings of Ames et al. are the same as relied upon in the rejection of claims 1 and 11. Ames also discloses the electrical contacts are bent

in different directions at segments thereof prior to attaching the optical sub-assembly to the printed circuit board using the lead frame connector (figure 1; and p. 2, [0018]-[0020]).

With respect to claim 15, the teachings of Ames et al. are the same as relied upon in the rejection of claim 1. Ames also discloses a first end of each of the electrical contacts is encased in a plastic casing and a second [end] (noting that the examiner assumed the applicant meant to claim a second end of the contacts) of each of the electrical contacts is not encased and capable of being soldered to the printed circuit board (p. 2, [0017]-[0018]).

With respect to claim 16, the teachings of Ames et al. are the same as relied upon in the rejection of claim 1. Ames also discloses a bent portion of at least one of the electrical contacts is encased in a plastic casing ([0015]).

With regard to claim 17, the teachings of Ames et al. are the same as relied upon in the rejection of claims 1 and 16. Ames also discloses the plastic casing provides mechanical support to the bent portion of the at least one of the electrical contacts encased within the plastic casing; where Ames discloses the mechanical support to the conductors is provided so that the conductors don't short via contact with one another, and to form the flex cable which is bent preferably to 90 degrees ([0012]-[0015] and [0019]).

Regarding claim 18, the teachings of Ames et al. are the same as relied upon in the rejection of claim 1. And although there is no support for a rigid lead frame connector within Applicant's specification; Ames discloses a portion of the lead frame

connector between the optical subassembly and the printed circuit board is bent for advantages in connection; therefore suggesting that the bend is not removed or changed while the connection between electrical units is maintained ([0019]-[0020]).

With respect to claim 19, the teachings of Ames et al. are the same as relied upon in the rejection of claims 1 and 11. Ames also discloses a bent portion of at least one of the electrical contacts is encased in a plastic casing ([0015]).

With regard to claim 20, the teachings of Ames et al. are the same as relied upon in the rejection of claims 1, 11, and 19. Ames also although there is no support for the plastic casing providing mechanical stiffness to the bent portion of the contacts; Ames discloses the plastic casing provides mechanical support to the bent portion of the at least one of the electrical contacts encased within the plastic casing; where Ames discloses the mechanical support to the conductors is provided so that the conductors don't short via contact with one another, and to form the flex cable which is bent preferably to 90 degrees ([0012]-[0015] and [0019]).

Regarding claim 21, the teachings of Ames et al. are the same as relied upon in the rejection of claims 1 and 11. And although there is no support for a rigid lead frame connector within Applicant's specification; Ames discloses a portion of the lead frame connector between the optical subassembly and the printed circuit board is bent for advantages in connection; therefore suggesting that the bend is not removed or changed while the connection between electrical units is maintained ([0019]-[0020]).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-4 and 6-11, 13 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Card et al. (US 5,295,214) in view of Ames et al. (US 2003/0085054 A1).

Card discloses a "process for manufacturing the improved soldered joint between an optical sub-assembly and a flexible ribbon cable; and more generally between the leads of a component and an electrical interconnect structure," (Card et al., col. 3, lines 54-58) as seen in figure 1(100). Card also discloses there is a connection between the exposed terminals of the conductors on the optical sub-assembly and the electrical circuit (col. 4, lines 64-68). Furthermore, Card discloses mass soldering of any flexible or rigid circuit board (abstract) and states, "the soldering bridge is made an integral part of the land so that the soldering bridge contributes to the strength of the connection between the land and the solder joint" (col. 6, lines 31-34). Card discloses that the leads in figure 1(104) are soldered within the holes in figure 1(106) (col. 4, lines 55-57 and col. 9, lines 63-69). Card's disclosure of figure 1 and the positioning of "an electrical interconnection member within said housing and adjacent said first and second optical sub-assembly on the side of the sub-assemblies from which the leads extend, for electrical interconnection between elements of said optical module" (col. 10,

lines 31-36). Card discloses the method in which the optical sub-assembly and the ribbon cable are positioned, and lists reflow soldering as a process to attain this configuration (col. 8, lines 14-21). Card also disclosed "typically, one optical sub-assembly is a light transmitter for converting an electrical signal into an optical signal and the other is a light receiver for converting the optical signal into an electrical signal" (col. 1, lines 48-53). Column 5, lines 24-29 refers to a transmitter optical sub-assembly and column 4, lines 51-57 refer to a receiver optical sub-assembly. Card's discloses leads that are "integrally connected" to conductors that extend into a dielectric layer of the flexible cables (col. 4, lines 57-60). Card teaches a dielectric layer with which the leads are connected to and conductors extend from (col. 4, lines 57-60), as seen in figure 1. The general definition of a dielectric material is one that is non-conducting and is therefore considered insulating. Card discloses a "process for manufacturing the improved soldered joint between an optical sub-assembly and a flexible ribbon cable; and more generally between the leads of a component and an electrical interconnect structure," (col. 3, lines 54-58) as seen in figure 1(100). Card also discloses electrical contacts corresponding to the leads of the optical sub-assembly and conductors connected to a circuit (col. 3, lines 54-58 and col. 4, lines 64-68). Furthermore, Card discloses mass soldering of any flexible or rigid circuit board (abstract) and states, "the soldering bridge is made an integral part of the land so that the soldering bridge contributes to the strength of the connection between the land and the solder joint" (col. 6, lines 31-34). Card also discloses bending the plurality of electrical contacts at discrete segments of the electrical contacts (col. 4, lines 64-69), two of the segments of

the bent electrical contacts are encased with a plastic casing (polyamide, a thermoplastic material) (col. 7, lines 64-68 and figures 1-2(10)), and a first end of each of the electrical contacts is encased in a plastic casing and a second (end) of each of the each of the electrical contacts is not encased and capable of being soldered to the printed circuit board (col. 4, lines 55-68 and col. 7, lines 64-68). However, Card lacks suggestion that the lead frame connector (flexible cable) provides mechanical support for the optical sub-assembly. Ames discloses a lead frame connector provides mechanical support for the optical sub-assembly; See figures 2 and 8-10, which show that there is no additional support for the optical assembly other than the flex cable, and see the support (66) in figure 9 (Ames et al., p. 3, [0023] and [0027]). Ames also discloses bending the plurality of electrical contacts at discrete segments of the electrical contacts (p. 2, [0016]-[0020]), and the electrical contacts are bent in different directions at segments thereof prior to attaching the optical sub-assembly to the printed circuit board using the lead frame connector (figure 1; and p. 2, [0018]-[0020]). Ames discloses a bent portion of at least one of the electrical contacts is encased in a plastic casing ([0015]). Furthermore, Ames discloses the plastic casing provides mechanical support to the bent portion of the at least one of the electrical contacts encased within the plastic casing; where Ames discloses the mechanical support to the conductors is provided so that the conductors don't short via contact with one another, and to form the flex cable which is bent preferably to 90 degrees ([0012]-[0015] and [0019]). Although there is no support for a rigid lead frame connector within Applicant's specification; Ames discloses a portion of the lead frame connector between the optical subassembly

and the printed circuit board is bent for advantages in connection; therefore suggesting that the bend is not removed or changed while the connection between electrical units is maintained ([0019]-[0020]). Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Card et al. to include the lead frame mechanical support of Ames et al. in order to prevent stress in the flex cable, and in the respective electrical connections between the leads and the flex cable (Ames et al., p. 3, [0023], lines 12-14).

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ames et al. (US 2003/0085054 A1) as applied to claim 10 above, and further in view of Card et al. (US 5,295,214).

The teachings of Ames et al. are the same as relied upon in the rejection of claims 1 and 10. However, Ames lacks specific disclosure of reflow soldering the leads to the conductive structures. Card discloses the method in which the optical sub-assembly and the ribbon cable are positioned, and lists reflow soldering as a process to attain this configuration (Card et al., col. 8, lines 14-21). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Ames et al. to include the reflow soldering method of Card et al. in order to connect the sub-assembly to the cable (Card et al., col. 8, lines 10-20) and form an improved solder joint (Card et al., col. 3, lines 35-46).

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ames et al. (US 2003/0085054 A1) as applied to claim 10 above, and further in view of Liu et al. (US 2003/0026081).

The teachings of Ames et al. are the same as relied upon in the rejection of claims 1 and 10. However, Ames does not disclose the hot bar process as the method for connecting the leads of the conductive structure to the printed circuit board. Liu teaches that the "protruding contact leads are suitable for hot bar reflow, which is where a heated bar is used to melt the contact leads such that they bond with an external surface" (Liu, p. 3, col. 2, [0028], lines 10-13), as seen in figure 1 of Liu's application. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention Ames et al. to utilize a hot bar process in order to provide an efficient method for connecting the leads of the conductive structure to a printed circuit board (see Liu, p. 3, [0028], lines 10-13).

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Card et al. (US 5,295,214) and Ames et al. (US 2003/0085054 A1) as applied to claim 1 above, and further in view of Liu et al. (US 2003/0026081).

The teachings of Ames et al. are the same as relied upon in the rejection of claims 1 and 10. However, the combined invention of Card and Ames does not disclose the hot bar process as the method for connecting the leads of the conductive structure to the printed circuit board. Liu teaches that the "protruding contact leads are suitable for hot bar reflow, which is where a heated bar is used to melt the contact leads such

that they bond with an external surface" (Liu, p. 3, col. 2, [0028], lines 10-13), as seen in figure 1 of Liu's application. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the combined invention of Card et al. and Ames et al. to utilize a hot bar process in order to provide an efficient method for connecting the leads of the conductive structure to a printed circuit board (see Liu, p. 3, [0028], lines 10-13).

Response to Arguments

Applicant's arguments filed 10/25/07 have been fully considered but they are not persuasive for the reasons set forth below and in the final Office action mailed on 6/21/07. The applicant's argument that the flexible cable/circuit of Ames and Card et al. fails to provide "mechanical support" is not persuasive. The instant examiner completely agrees with the previous examiner's interpretation of the limitation "mechanical support". Accordingly, in view of the broadest reasonable interpretation the examiner maintains the position that the flexible cable/circuit of Ames and Card et al. provides some degree of "mechanical support" and meets the limitation of the claims. It should further be noted that the specification of the instant application does not provide a concise definition or explanation as to the degree of mechanical support that the lead frame connector provides for the optical sub-assembly. Nor does the disclosure imply that the lead frame connector has to be completely rigid or inflexible. It is the examiner's position that a component can be mechanically supported to another

component with some degree of movement or by a flexible cable/circuit. The applicant is encouraged to telephone the examiner to discuss the issue of "mechanical support".

Allowable Subject Matter

Claim 12 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kiley Stoner whose telephone number is 571-272-1183. The examiner can normally be reached Monday-Thursday (9:30 a.m. to 8:00 p.m.).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jonathan Johnson can be reached on 571-272-1177. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

1/24/08

Kiley Stoner

Primary Examiner A.U. 1793